Product Information

PowerFlex 700 AC Drives, Frames 7...10

Allen-Bradley

ATTENTION:

Read this document and the documents listed in the Additional Resources section about installation, configuration and operation of this equipment before you install, configure, operate or maintain this product. Users are required to familiarize themselves with installation and wiring instructions in addition to requirements of all applicable codes, laws, and standards.

Activities including installation, adjustments, putting into service, use, assembly, disassembly, and maintenance are required to be carried out by suitably trained personnel in accordance with applicable code of practice.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

注意：

在安装、配置、操作和维护本产品前，请阅读本文档以及 “ 其他资源 ” 部分列出的有关设备安装、配置和操作的相应文档。除了所有适用规范、法律和标准的相关要求之外，用户还必须熟悉安装和接线说明。

安装、调整、投运、使用、组装、拆卸和维护等各项操作必须由经过适当训练的专业人员按照适用的操作规范实施。

如果未按照制造商指定的方式使用该设备，则可能会损害设备提供的保护。

ATENCIÓN:

Antes de instalar, configurar, poner en funcionamiento o realizar el mantenimiento de este producto, lea este documento y los documentos listados en la sección Recursos adicionales acerca de la instalación, configuración y operación de este equipo. Los usuarios deben familiarizarse con las instrucciones de instalación y cableado y con los requisitos de todos los códigos, leyes y estándares vigentes.

El personal debidamente capacitado debe realizar las actividades relacionadas a la instalación, ajustes, puesta en servicio, uso, ensamblaje, desensamblaje y mantenimiento de conformidad con el código de práctica aplicable.

Si este equipo se usa de una manera no especificada por el fabricante, la protección provista por el equipo puede resultar afectada.

ATENÇÃO:

Leia este e os demais documentos sobre instalação, configuração e operação do equipamento que estão na seção Recursos adicionais antes de instalar, configurar, operar ou manter este produto. Os usuários devem se familiarizar com as instruções de instalação e fiação além das especificações para todos os códigos, leis e normas aplicáveis.

É necessário que as atividades, incluindo instalação, ajustes, colocação em serviço, utilização, montagem, desmontagem e manutenção sejam realizadas por pessoal qualificado e especializado, de acordo com o código de prática aplicável.

Caso este equipamento seja utilizado de maneira não estabelecida pelo fabricante, a proteção fornecida pelo equipamento pode ficar prejudicada.

ВНИМАНИЕ:

Перед тем как устанавливать, настраивать, эксплуатировать или обслуживать данное оборудование, прочитайте этот документ и документы, перечисленные в разделе «Дополнительные ресурсы». В этих документах изложены сведения об установке, настройке и эксплуатации данного оборудования. Пользователи обязаны ознакомиться с инструкциями по установке и прокладке соединений, а также с требованиями всех применимых норм, законов и стандартов.

Все действия, включая установку, наладку, ввод в эксплуатацию, использование, сборку, разборку и техническое обслуживание, должны выполняться обученным персоналом в соответствии с применимыми нормами и правилами.

Если оборудование используется не предусмотренным производителем образом, защита оборудования может быть нарушена.

注意：

本製品を設置、構成、稼動または保守する前に、本書および本機器の設置、設定、操作についての参考資料の該当箇所に記載されている文書に目を通してください。ユーザは、すべての該当する条例、法律、規格の要件に加えて、設置および配線の手順に習熟している必要があります。

設置調整、運転の開始、使用、組立て、解体、保守を含む諸作業は、該当する実施規則に従って訓練を受けた適切な作業員が実行する必要があります。

本機器が製造メーカにより指定されていない方法で使用されている場合、機器により提供されている保護が損なわれる恐れがあります。

ACHTUNG:

Lesen Sie dieses Dokument und die im Abschnitt „Literaturverweise“ genannten Dokumente zur Installation, Konfiguration und Bedienung dieser Ausrüstung sorgfältig durch, bevor Sie dieses Produkt installieren, konfigurieren, bedienen oder instandsetzen. Benutzer müssen sich mit den Anweisungen zur Installation und Verdrahtung vertraut machen und müssen die Anforderungen aller geltenden Vorschriften, Gesetze und Normen kennen.

Aktivitäten wie Installation, Einstellung, Inbetriebnahme, Verwendung, Montage, Demontage und Instandsetzung müssen durch ausreichend geschultes Personal in Übereinstimmung mit den geltenden Durchführungsvorschriften ausgeführt werden.

Wenn diese Ausrüstung in einer Weise verwendet wird, die nicht vom Hersteller angegeben wurde, kann der von der Ausrüstung bereitgestellte Schutz beeinträchtigt sein..

ATTENTION :

Lisez ce document et les documents listés dans la section Ressources complémentaires relatifs à l’installation, la configuration et le fonctionnement de cet équipement avant d’installer, configurer, utiliser ou entretenir ce produit. Les utilisateurs doivent se familiariser avec les instructions d’installation et de câblage en plus des exigences relatives aux codes, lois et normes en vigueur.

Les activités relatives à l’installation, le réglage, la mise en service, l’utilisation, l’assemblage, le démontage et l’entretien doivent être réalisées par des personnes formées selon le code de pratique en vigueur.

Si cet équipement est utilisé d’une façon qui n’a pas été définie par le fabricant, la protection fournie par l’équipement peut être compromise.

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Lisez ce document et les documents listés dans la section Ressources complémentaires relatifs à l’installation, la configuration et le fonctionnement de cet équipement avant d’installer, configurer, utiliser ou entretenir ce produit. Les utilisateurs doivent se familiariser avec les instructions d’installation et de câblage en plus des exigences relatives aux codes, lois et normes en vigueur.

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주의 :

본 제품 설치, 설정, 작동 또는 유지 보수하기 전에 본 문서를 포함하여 설치, 설정 및 작동에 관한 참고 자료 섹션의 문서들을 반드시 읽고 숙지하십시오. 사용자는 모든 관련 규정 , 법규 및 표준에서 요구하는 사항에 대해 반드시 설치 및 배선 지침을 숙지해야 합니다 .

설치 , 조정 , 가동 , 사용 , 조립 , 분해 , 유지보수 등 모든 작업은 관련 규정에 따라 적절한 교육을 받은 사용자를 통해서만 수행해야 합니다 .

본 장비를 제조사가 명시하지 않은 방법으로 사용하면 장비의 보호 기능이 손상될 수 있습니다 .

ATTENZIONE

Prima di installare, configurare ed utilizzare il prodotto, o effettuare interventi di manutenzione su di esso, leggere il presente documento ed i documenti elencati nella sezione “Altre risorse”, riguardanti l’installazione, la configurazione ed il funzionamento dell’apparecchiatura. Gli utenti devono leggere e comprendere le istruzioni di installazione e cablaggio, oltre ai requisiti previsti dalle leggi, codici e standard applicabili.

Le attività come installazione, regolazioni, utilizzo, assemblaggio, disassemblaggio e manutenzione devono essere svolte da personale adeguatamente addestrato, nel rispetto delle procedure previste.

Qualora l’apparecchio venga utilizzato con modalità diverse da quanto previsto dal produttore, la sua funzione di protezione potrebbe venire compromessa.

DİKKAT:

Bu ürünün kurulumu, yapılandırılması, işletilmesi veya bakımı öncesinde bu dokümanı ve bu ekipmanın kurulumu, yapılandırılması ve işletimi ile ilgili İlave Kaynaklar bölümünde yer listelenmiş dokümanları okuyun. Kullanıcılar yürürlükteki tüm yönetmelikler, yasalar ve standartların gereksinimlerine ek olarak kurulum ve kablolama talimatlarını da öğrenmek zorundadır.

Kurulum, ayarlama, hizmete alma, kullanma, parçaları birleştirme, parçaları sökme ve bakım gibi aktiviteler sadece uygun eğitimleri almış kişiler tarafından yürürlükteki uygulama yönetmeliklerine uygun şekilde yapılabilir.

Bu ekipman üretici tarafından belirlenmiş amacın dışında kullanılırsa, ekipman tarafından sağlanan koruma bozulabilir.

注意事項：

在安裝、設定、操作或維護本產品前，請先閱讀此文件以及列於「其他資源」章節中有關安裝、設定與操作此設備的文件。使用者必須熟悉安裝和配線指示，並符合所有法規、法律和標準要求。

包括安裝、調整、交付使用、使用、組裝、拆卸和維護等動作都必須交由已經過適當訓練的人員進行，以符合適用的實作法規。

如果將設備用於非製造商指定的用途時，可能會造成設備所提供的保護功能受損。

POZOR:

Než začnete instalovat, konfigurovat či provozovat tento výrobek nebo provádět jeho údržbu, přečtěte si tento dokument a dokumenty uvedené v části Dodatečné zdroje ohledně instalace, konfigurace a provozu tohoto zařízení. Uživatelé se musejí vedle požadavků všech relevantních vyhlášek, zákonů a norem nutně seznámit také s pokyny pro instalaci a elektrické zapojení.

Činnosti zahrnující instalaci, nastavení, uvedení do provozu, užívání, montáž, demontáž a údržbu musí vykonávat vhodně proškolený personál v souladu s příslušnými prováděcími předpisy.

Pokud se toto zařízení používá způsobem neodpovídajícím specifikaci výrobce, může být narušena ochrana, kterou toto zařízení poskytuje.

UWAGA:

Przed instalacją, konfiguracją, użytkowaniem lub konserwacją tego produktu należy przeczytać niniejszy dokument oraz wszystkie dokumenty wymienione w sekcji Dodatkowe źródła omawiające instalację, konfigurację i procedury użytkowania tego urządzenia. Użytkownicy mają obowiązek zapoznać się z instrukcjami dotyczącymi instalacji oraz oprzewodowania, jak również z obowiązującymi kodeksami, prawem i normami.

Działania obejmujące instalację, regulację, przekazanie do użytkowania, użytkowanie, montaż, demontaż oraz konserwację muszą być wykonywane przez odpowiednio przeszkolony personel zgodnie z obowiązującym kodeksem postępowania.

Jeśli urządzenie jest użytkowane w sposób inny niż określony przez producenta, zabezpieczenie zapewniane przez urządzenie może zostać ograniczone.

OBS!

Läs detta dokument samt dokumentet, som står listat i avsnittet Övriga resurser, om installation, konfigurering och drift av denna utrustning innan du installerar, konfigurerar eller börjar använda eller utföra underhållsarbete på produkten. Användare måste bekanta sig med instruktioner för installation och kabeldragning, förutom krav enligt gällande koder, lagar och standarder.

Åtgärder som installation, justering, service, användning, montering, demontering och underhållsarbete måste utföras av personal med lämplig utbildning enligt lämpligt bruk.

Om denna utrustning används på ett sätt som inte anges av tillverkaren kan det hända att utrustningens skyddsanordningar försätts ur funktion.

LET OP:

Lees dit document en de documenten die genoemd worden in de paragraaf Aanvullende informatie over de installatie, configuratie en bediening van deze apparatuur voordat u dit product installeert, configureert, bediend of onderhoudt. Gebruikers moeten zich vertrouwd maken met de installatie en de bedradingsinstructies, naast de vereisten van alle toepasselijke regels, wetten en normen.

Activiteiten zoals het installeren, afstellen, in gebruik stellen, gebruiken, monteren, demonteren en het uitvoeren van onderhoud mogen uitsluitend worden uitgevoerd door hiervoor opgeleid personeel en in overeenstemming met de geldende praktijkregels.

Indien de apparatuur wordt gebruikt op een wijze die niet is gespecificeerd door de fabrikant, dan bestaat het gevaar dat de beveiliging van de apparatuur niet goed werkt.

Additional Resources

These documents contain additional information concerning related products from Rockwell Automation.

Resource	Description
PowerFlex® 700 Adjustable Frequency AC Drive, Frames 7...10 Installation Instructions, publication 20B-IN014	Provides the basic information for installing the drive, including mounting, power wiring, I/O wiring, and a start-up checklist.
PowerFlex 700 Vector Control User Manual (v4.001 & up), publication 20B-UM002	Provides the basic information needed to install, start-up, and troubleshoot the PowerFlex 700 adjustable frequency AC drive.
PowerFlex 700 Adjustable Frequency AC Drive Technical Data, publication 20B-TD001	Provides technical data regarding the PowerFlex 700 adjustable frequency AC drives for a variety of industrial applications.
Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives, publication DRIVES-IN001	Provides basic information needed to properly wire and ground PWM AC drives.
Industry Installation Guidelines for Pulse Width Modulated (PWM) AC Drives Application Technique, publication DRIVES-AT003	Provides basic information for different enclosure systems, and power and grounding considerations needed to properly install a PWM AC drive.
Industrial Automation Wiring and Grounding Guidelines, publication 1770-4.1	Provides general guidelines for installing a Rockwell Automation industrial system.
Product Certifications website, http://www.rockwellautomation.com/products/certification	Provides declarations of conformity, certificates, and other certification details.

You can view or download publications at http://www.rockwellautomation.com/literature/. To order paper copies of technical documentation, contact your local Allen-Bradley distributor or Rockwell Automation sales representative.

ATTENTION: Only qualified personnel familiar with adjustable frequency AC drives and associated machinery should plan or implement the installation, start-up and subsequent maintenance of the system. Failure to comply may result in personal injury and/or equipment damage.

ATTENTION: An incorrectly applied or installed drive can result in component damage or a reduction in product life. Wiring or application errors such as under sizing the motor, incorrect or inadequate AC supply, or excessive surrounding air temperatures may result in malfunction of the system.

ATTENTION: Drive **must not** be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors or dust. If the drive is not going to be installed for a period of time, it must be stored in an area where it will not be exposed to a corrosive atmosphere.

Operating Temperatures

PowerFlex 700 drives (Frames 7...10) are designed to operate at 0…40 ° C (32...104 °F) ambient.

Minimum Mounting Clearances & Heat Dissipation

The drive must be mounted with sufficient space at the top, sides, and front of the cabinet to allow for proper heat dissipation.

Frame	Recommendations
7	Allow a minimum of 152 mm (6.0 in.) at the top and bottom of the enclosure and 102 mm (4.0 in.) on the sides. Flange Mount - Allow a minimum of 152 mm (6.0 in.) at the back of the enclosure (from flange mount surface to wall).
8...10	Allow a minimum of 152 mm (6.0 in.) at the top of the enclosure. Additionally, allow a minimum of 102 mm (4.0 in.) on each side, OR 152 mm (6.0 in.) in the back.

Drive Weights

Frame 7	IP00, NEMA/UL Type Open	147 kg (324 lb)
	IP20, NEMA/UL Type 1	170 kg (375 lb)
Frame 8	IP00, NEMA/UL Type Open	384 kg (847 lb)
	IP00, NEMA/UL Type Open Roll-In	250 kg (552 lb)
	IP20, NEMA/UL Type 1	509 kg (1122 lb)
Frame 9	IP00, NEMA/UL Type Open	401 kg (884 lb)
	IP00, NEMA/UL Type Open Roll-In	267 kg (589 lb)
	IP20, NEMA/UL Type 1	526 kg (1159 lb)
Frame 10	IP00, NEMA/UL Type Open (DC input)	305 kg (672 lb)
	IP00, NEMA/UL Type Open (AC input)	532 kg (1172 lb)
	IP20, NEMA/UL Type 1 (DC input)	468 kg (1032 lb)
	IP20, NEMA/UL Type 1 (AC input)	867 kg (1912 lb)

Leakage Current

- PowerFlex 700 drives produce leakage current in the protective earthing conductor which exceeds 3.5 mA AC and/or 10 mA DC. The minimum size of the protective earthing (grounding) conductor used in the application must comply with local safety regulations for high protective earthing conductor current equipment.
- PowerFlex 700 drives produce DC current in the protective earthing conductor and may reduce the ability of a residual current device (RCD) or residual current monitor (RCM) of type A or AC to provide protection for the drive and other equipment in the installation.

Motor Overload Protection

Electronic Motor Overload Protection:	Class 10 motor overload protection according to NEC article 430 and motor over-temperature protection according to NEC article 430.126 (A)(2). UL 508C File E59272.

Short Circuit Current Rating

Maximum Short Circuit Rating:	200,000 Amps symmetrical.

Branch Circuit Short Circuit Protection

Integral solid state short circuit protection does not provide branch circuit protection. Branch circuit protection must be provided in accordance with the National Electric Code (NEC) and any additional local codes, or the equivalent. The tables on the following pages provide drive ratings (including continuous, 1 minute and 3 second) and recommended AC line input fuse and circuit breaker information. Both types of short circuit protection are acceptable for UL and IEC requirements. Sizes listed are the recommended sizes based on 40 °C (104 °F) and the U.S. N.E.C. Other country, state or local codes can require different ratings.

Fuse and Circuit Breaker Ratings

The tables on the following pages provide recommended AC line input fuse and circuit breaker information. See Fusing and Circuit Breakers below for UL and IEC requirements. Sizes listed are the recommended sizes based on 40 °C (104 °F) and the U.S. NEC. Other country, state, or local codes can require different ratings. Tables with DC link fuse recommendations for DC input drives are also provided.

Fusing

The recommend fuse types are listed below. If available current ratings do not match those listed in the tables provided, chose the next higher fuse rating.

- IEC – BS88 (British Standard) Parts 1 & 2, EN60269-1, Parts 1 & 2[1], type gG or equivalent should be used.
- UL Class T, RK1, J, or L should be used.

Circuit Breakers

The "non-fuse" listings in the following tables include inverse time circuit breakers and instantaneous trip circuit breakers (motor circuit protectors). If one of these is chosen as the desired protection method, the following requirements apply:

- IEC – Both types of circuit breakers are acceptable for IEC installations.
- UL - Only inverse time circuit breakers are acceptable for UL installations.

[1] Typical designations include, but may not be limited to the following; Parts 1 & 2: AC, AD, BC, BD, CD, DD, ED, EFS, EF, FF, FG, GF, GG, GH.

DC Input Protection Devices

540 Volt DC Input Protection Devices (See page 4 for Notes)

Drive Catalog Number	Frame	kW Rating		PWM Freq.	Temp.	DC Input Ratings		Output Amps			Fuse	Non-Time Delay Fuse (3) (4)
		ND	HD	kHz	°C	Amps	kW	Cont.	1 Min.	3 Sec.		
20BP292	7	160		4	40	342	185	292	322	438	500	170M6608
			150	4	40	309	166	263	395	526	630	170M6610
20BP325	7	180		4	40	381	206	325	358	488	630	170M6610 (5)
			180	4	40	381	206	325	488	650	800	170M6612 (5)
20BP365	8	200		2	40	428	231	365	402	548	630	170M6610 (5)
			180	2	40	381	206	325	488	650	800	170M6612 (5)
20BP415	8	240		2	40	487	262	415	457	623	800	170M6612 (5)
			200	2	40	428	231	365	548	730	900	170M6613 (5)
20BP481	8	280		2	40	564	304	481	530	722	900	170M6613 (5)
			240	2	40	487	262	415	623	830	1000	170M6614 (5)
20BP535	8	300		2	40	627	338	535	589	803	1000	170M6614 (5)
			280	2	40	564	304	481	722	962	1100	170M6615 (5)
20BP600	8	350		2	40	703	379	600	660	900	1100 (1)	170M6615 (5)
			300	2	40	627	338	535	803	1070	1200 (1)	170M6616 (5)
20BP730	9	400		2	40	855	461	730	803	1095	1200 (2)	170M6616 (5)
			350	2	40	703	379	600	900	1200	1400 (2)	170M6617 (5)
20BH875 No Precharge	10	500		2	40	1025	553	875	963	1313	2 x 800	170M6612 (5)
			400	2	40	820	443	700	1050	1400	2 x 800	170M6612 (5)

650 Volt DC Input Protection Device

Drive Catalog Number	Frame	Hp Rating		PWM Freq.	Temp.	DC Input Ratings		Output Amps			Fuse	Non-Time Delay Fuse (3) (4)
		ND	HD	kHz	°C	Amps	kW	Cont.	1 Min.	3 Sec.		
20BR292	7	250		4	40	328	212	292	322	438	630	170M6608 (5)
			200	4	40	296	191	263	395	526	630	170M6608 (5)
20BR325	7	250		4	40	365	236	325	358	488	800	170M6612 (5)
			250	4	40	365	236	325	488	650	800	170M6612 (5)
20BR365	8	300		2	40	410	265	365	402	548	800	170M6612 (5)
			250	2	40	365	236	325	488	650	800	170M6612 (5)
20BR415	8	350		2	40	466	302	415	457	623	800	170M6612 (5)
			300	2	40	410	265	365	548	730	800	170M6612 (5)
20BR481	8	400		2	40	540	350	481	530	722	900	170M6613 (5)
			350	2	40	466	302	415	623	830	900	170M6613 (5)
20BR535	8	450		2	40	601	389	535	589	803	1000	170M6614 (5)
			400	2	40	540	350	481	722	962	1000	170M6614 (5)
20BR600	8	500		2	40	674	436	600	660	900	1200 (1)	170M6616 (5)
			450	2	40	601	389	535	803	1070	1200 (1)	170M6616 (5)
20BR730	9	600		2	40	820	533	730	803	1095	1400 (2)	170M6617 (5)
			500	2	40	674	436	600	900	1200	1400 (2)	170M6617 (5)
20BJ875 No Precharge	10	700		2	40	983	636	875	963	1313	2 x 800	170M6612 (5)
			600	2	40	786	509	700	1050	1400	2 x 800	170M6612 (5)

Notes:

(1) Two 630A Bussmann 170M6608 can also be used.
(2) Two 700A Bussmann 170M6611 can also be used.
(3) The power source to common bus inverters must be derived from AC voltages 600V or less, as defined in NFPA70; Art 430-18 (NEC). Battery supplies or MG sets are not included. The following devices were validated to break current of the derived power DC Bus. Disconnects: Allen-Bradley Bulletin 1494, 30-400A; 194, 30-400A; or ABB OESA, 600 & 800A; OESL, all sizes. Fuses: Bussmann Type JKS, all sizes; Type 170M, Case Sizes 1, 2 and 3, or Ferraz Shawmut Type HSJ, all sizes. For any other devices, please contact the factory.
(4) See Fuse Certification and Test Data in PowerFlex AC Drives in Common Bus Configurations Application Guidelines, publication DRIVES-AT002, for fuse self-certification and test data for Bussmann 170M and JKS fuses recommended for the DC bus fusing.
(5) Bussmann or equivalent.

Single-phase AC Input Ratings

380…480 Volt Single-Phase AC Input Ratings

480V Single-Phase AC Input						380…400V Single-Phase AC Input						Temp.
Drive Catalog Number	Frame	Hp Rating	Input Amps	Three-Phase Output		Drive Catalog Number	Frame	kW Rating	Input Amps	Three-Phase Output		
				V AC	Amps					V AC	Amps	°C
20BD292	7	125	237.4	0-460	146	20BC292	7	80	247.7	0-400	146	25
20BD325	7	125	264.3	0-460	162.5	20BC325	7	90	275.7	0-400	162.5	25

AC Input Protection Devices

400 Volt AC Input (7) (See page 5 for Notes)

Drive Catalog Number (6)	Frame	kW Rating		PWM Freq.	Temp. (8)	Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker (3)	Motor Circuit Protector (4)
		ND	HD	kHz	°C	Amps	kVA	Cont.	1 Min.	3 Sec.	Min. (1)	Max. (2)	Min. (1)	Max. (2)	Max. (5)	Max. (5)
20BC292	7	160		4	40	293	203	292	322	438	375	650	375	850	850	400
			150	4	40	264	183	263	395	526	350	550	350	550	750	400
20BC325	7	180		4	40	326	226	325	358	488	425	700	425	950	950	600
			180	4	40	326	226	325	488	650	425	700	425	950	950	600
20BC365	8	200		2	40	366	253	365	402	548	475	800	475	1000	1000	600
			180	2	40	326	226	325	488	650	425	700	425	950	950	600
20BC415	8	240		2	40	416	288	415	457	623	525	900	525	1200	1200	600
			200	2	40	366	253	365	548	730	475	800	475	1000	1000	600
20BC481	8	280		2	40	483	334	481	530	722	600	1000	600	1400	1400	700
			240	2	40	416	288	415	623	830	525	900	525	1200	1200	600
20BC535	8	300		2	40	537	372	535	589	803	700	1200	700	1600	1600	700
			280	2	40	483	334	481	722	962	600	1000	600	1400	1400	700
20BC600	8	350		2	40	602	417	600	660	900	750	1300	750	1800	1800	800
			300	2	40	537	371	535	803	1070	700	1200	700	1600	1600	700
20BC730	9	400		2	40	702	486	730	803	1095	900	1500	900	2100	2100	900
			350	2	40	602	417	600	900	1200	750	1300	750	1800	1800	800
20BC875	10	500		2	40	877	608	875	963	1313	1100	1900	1100	2600	2600	1200
			400	2	40	877	486	700	1050	1400	900	1500	900	2100	2100	900

480 Volt AC Input (7)

Drive Catalog Number (6)	Frame	Hp Rating		PWM Freq.	Temp. (8)	Input Ratings		Output Amps			Dual Element Time Delay Fuse		Non-Time Delay Fuse		Circuit Breaker (3)	Motor Circuit Protector (4)
		ND	HD	kHz	°C	Amps	kVA	Cont.	1 Min.	3 Sec.	Min. (1)	Max. (2)	Min. (1)	Max. (2)	Max. (5)	Max. (5)
20BD292	7	250		4	40	281	233	292	322	438	375	650	375	850	850	400
			200	4	40	253	210	263	395	526	350	550	350	550	750	400
20BD325	7	250		4	40	313	260	325	358	488	425	700	425	950	950	600
			250	4	40	313	260	325	488	650	425	700	425	950	950	600
20BD365	8	300		2	40	351	292	365	402	548	475	800	475	1000	1000	600
			250	2	40	313	260	325	488	650	425	700	425	950	950	600
20BD415	8	350		2	40	399	331	415	457	623	525	900	525	1200	1200	600
			300	2	40	351	291	365	548	730	475	800	475	1000	1000	600
20BD481	8	400		2	40	462	384	481	530	722	600	1000	600	1400	1400	700
			350	2	40	399	331	415	623	830	525	900	525	1200	1200	600
20BD535	8	450		2	40	514	427	535	589	803	700	1200	700	1600	1600	700
			400	2	40	462	384	481	722	962	600	1000	600	1400	1400	700
20BD600	8	500		2	40	577	479	600	660	900	750	1300	750	1800	1800	800
			450	2	40	514	427	535	803	1070	700	1200	700	1600	1600	700
20BD730	9	600		2	40	673	559	730	803	1095	900	1500	900	2100	2100	900
			500	2	40	577	479	600	900	1200	750	1300	750	1800	1800	800
20BD875	10	700		2	40	841	699	875	963	1313	1100	1900	1100	2600	2600	1200
			600	2	40	673	559	700	1050	1400	900	1500	900	2100	2100	900

Notes:

(1) Minimum protection device size is the lowest rated device that supplies maximum protection without nuisance tripping.
(2) Maximum protection device size is the highest rated device that supplies drive protection. For US NEC, minimum size is 125% of motor FLA. Ratings shown are maximum.
(3) Circuit Breaker - inverse time breaker. For US NEC, minimum size is 125% of motor FLA. Ratings shown are maximum.
(4) Motor Circuit Protector - instantaneous trip circuit breaker. For US NEC minimum size is 125% of motor FLA. Ratings shown are maximum.
(5) Maximum allowable rating by US NEC. Exact size must be chosen for each installation.
(6) Drives have dual current ratings; one for normal duty applications, and one for heavy duty applications. The drive may be operated at either rating.
(7) Frame 7...10 drives are CE Certified for use with 400V AC and 480V AC center grounded neutral power supply systems only. It is the responsibility of the user to determine compliance to the EMC directive.
(8) Temperature rating is for IP20, NEMA/UL Type 1. For IP00, NEMA Type Open the temperature rating is 65 °C for the control board and 40 °C for the heat sink entry air.

Wire and Terminal Blocks

Wire Recommendations

Type		Wire Type(s)	Description
Power (1)(2)	Standard	600V, 90 °C (194 °F) XHHW2/RHW-2 Anixter B209500-B209507, Belden 29501-29507, or equivalent	• Four tinned copper conductors with XLPE insulation. • Copper braid/aluminum foil combination shield and tinned copper drain wire. • PVC jacket.

(1) Control and signal wires should be separated from power wires by at least 0.3 meters (1 foot).
(2) The use of shielded wire for AC input power may not be necessary but is always recommended.

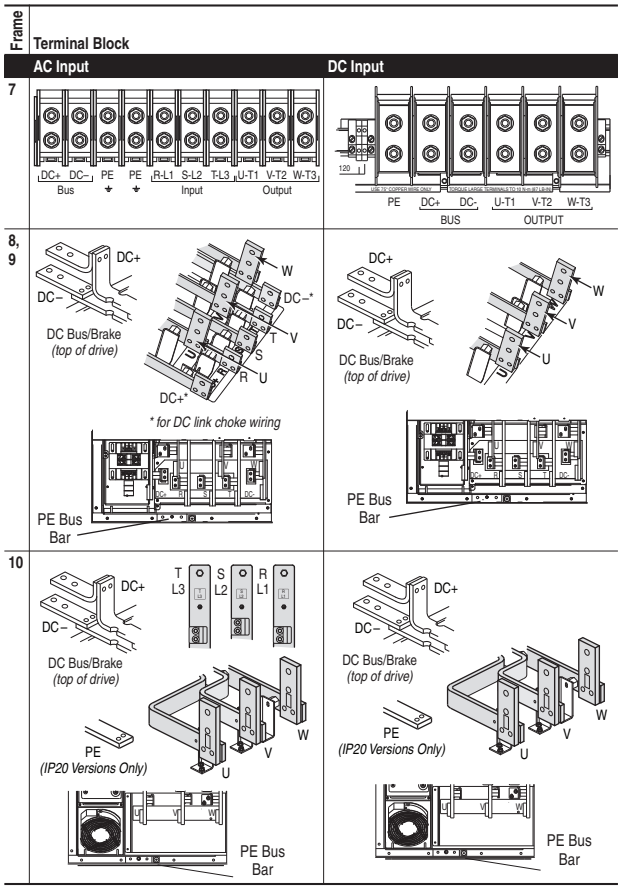
Terminal Block Specifications

Refer to pages 6 and 7 for typical locations.

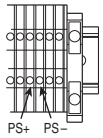
Name	Frame	Description	Wire Size Range (1)		Torque	
			Maximum	Minimum	Maximum	Recommended
Power Terminal Block	7	Input power, DC+, DC–, PE, motor connections	150.0 mm² (300 MCM) *see Note* (2)	2.5 mm² (14 AWG)	2.7 N•m (24 lb•in)	2.7 N•m (24 lb•in)
	8 & 9	Input power, DC+, DC–, PE, motor connections	300.0 mm² (600 MCM) *see Note* (2)	2.5 mm² (14 AWG)	10.0 N•m (87 lb•in)	10.0 N•m (87 lb•in)
	10	Input power, DC+, DC–, PE, motor connections	300.0 mm² (600 MCM) *see Note* (2)	2.5 mm² (14 AWG)	10.0 N•m (87 lb•in)	10.0 N•m (87 lb•in)
Auxiliary Terminal Block	All	Auxiliary Control Voltage, PS+, PS-	4.0 mm² (12 AWG)	0.049mm² (30 AWG)	0.6 N•m (5.3 lb•in)	0.6 N•m (5.3 lb•in)

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations.
(2) If may be necessary to connect multiple wires in parallel to these terminals using multiple lugs.

Power Terminal Blocks

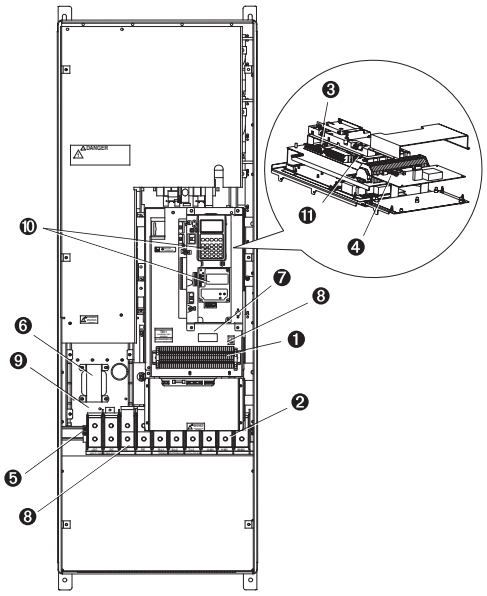


Power and Auxiliary Terminal Blocks Descriptions

Terminal	Description	Notes
DC +/– (Top of Drive)	DC Bus	DC Input/Brake Connections
DC +/– (Power TB)	DC Bus	DC Link Choke, wire to: Bottom of Drive - Frames 8/9 Converter Section - Frame 10
PS+, PS–	Auxiliary Control Terminal Block  	see pages 6 through 7 for location
PE	PE Ground	
⏚	Motor Ground	
U	U (T1)	To Motor
V	V (T2)	
W	W (T3)	
R	R (L1)	AC Line Input Power Three-Phase = R, S & T Single-Phase = R & S Only
S	S (L2)	
T	T (L3)	

Terminal and Component Locations

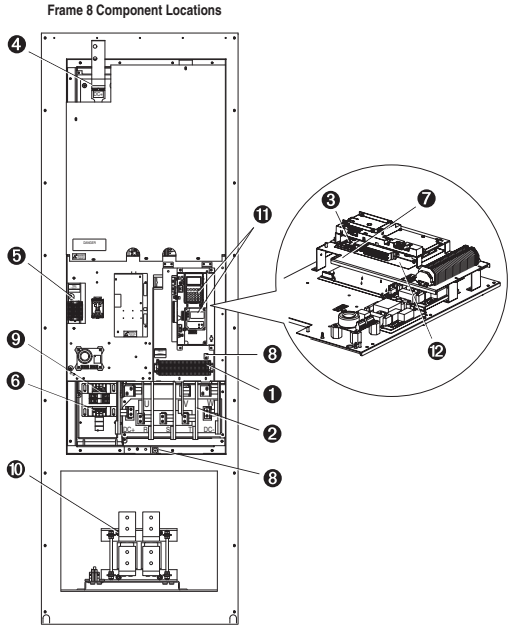
Frame 7 Component Locations



No.	Component
1	I/O & Auxiliary Control Voltage - TB11
2	Power Terminal Block
3	Main Control Board
4	Precharge Board
5	Fan Terminal Block (DC input only)
6	Fan Transformer (AC input only)

No.	Component
7	Nameplate
8	PE Ground
9	MOV
10	HIM/Comm Module (Optional)
11	Encoder Feedback Board (Optional)

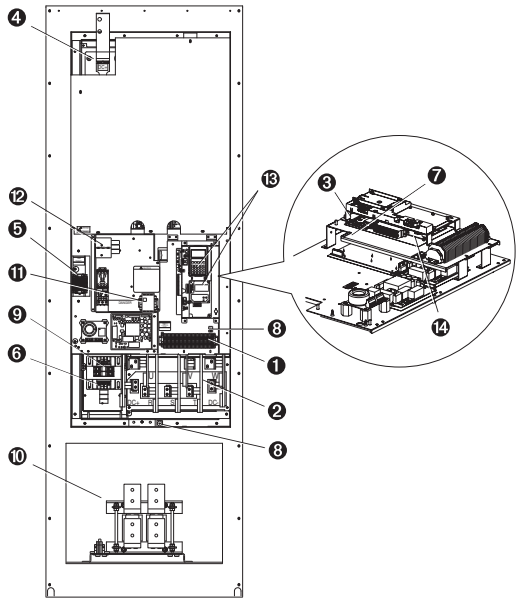
Frame 8 Component Locations



No.	Component
1	I/O & Auxiliary Control Voltage - TB11
2	Power Terminals
3	Main Control Board
4	DC Bus/Brake Terminals
5	Fan Terminal Block - TB9
6	Fan Transformer (AC input only)

No.	Component
7	Nameplate
8	PE Ground (and MOV wire)
9	MOV (located under boards)
10	DC Link Choke (AC input only)
11	HIM/Comm Module (Optional)
12	Encoder Feedback Board (Optional)

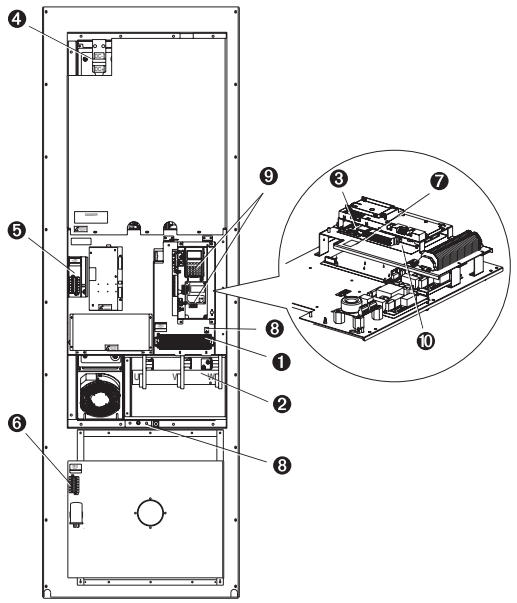
Frames 9 Component Locations



No.	Component
1	I/O & Auxiliary Control Voltage - TB11
2	Power Terminals
3	Main Control Board
4	DC Bus/Brake Terminals
5	Fan Terminal Block (cap. fan) - TB9
6	Fan Transformer (cap. fan) - AC input only
7	Nameplate

No.	Component
8	PE Ground (and MOV wire)
9	MOV (located under boards)
10	DC Link Choke (AC input only)
11	Phase Monitor
12	Blower Terminal Block (three-phase)
13	HIM/Comm Module (Optional)
14	Encoder Feedback Board (Optional)

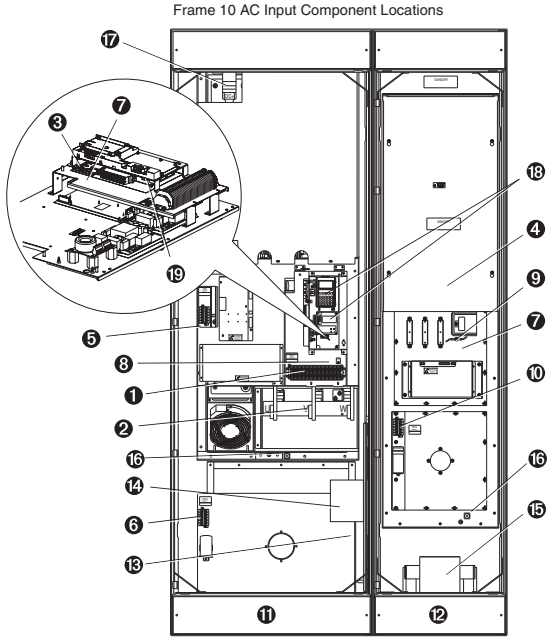
Frame 10 DC Input Component Locations



No.	Component
1	I/O & Auxiliary Control Voltage - TB11
2	Motor Terminal Block
3	Main Control Board
4	DC Bus/Brake Terminals
5	Fan Terminal Block - TB9 (Capacitor Assembly Fan)

No.	Component
6	Fan Terminal Block - TB10 (Heatsink Fan)
7	Nameplate
8	PE Ground
9	HIM/Comm Module (Optional)
10	Encoder Feedback Board (Optional)

Frame 10 AC Input Component Locations



No.	Component
1	I/O & Auxiliary Control Voltage - TB11
2	Motor Terminal Block
3	Main Control Board
4	AC Input Terminals (Behind Shield)
5	Fan Terminal Block - TB9 (Capacitor Assembly Fan)
6	Fan Terminal Block - TB10 (Heatsink Fan)
7	Nameplate
8	PE Ground
9	MOV Jumper
10	Fan Terminal Block - TB12 (Heatsink Fan)

No.	Component
11	Inverter Section
12	Converter Section
13	PE Bus Bar (IP20 Only)
14	Fan Transformer (IP20 Only)
15	DC Link Choke (AC input only, supplied loose for IP00)
16	PE Connection Point (IP00)
17	DC Bus/Brake Terminals
18	HIM/Comm Module (Optional)
19	Encoder Feedback Board (Optional)

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